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Preliminary Site Inspection Report

Naval Amphibious Base Little Creek Norfolk, Virginia July1991

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FINAL

PRELIMINARY SITE INSPECTION REPORT

NAVAL AMPHIBIOUS BASE, LITTLE CREEK
NORFOLK, VIRGINIA

Prepared for

Department of the Navy, Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia

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JULY 1991

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

The Preliminary Site Inspection (PSI) Report was prepared to assess the threat to human health and the environment from five sites at the Naval Amphibious Base Little Creek; for the purpose of this report, these five sites will be referred to collectively as the SI sites:

Site 4 - Reserve Center Motor Oil Disposal Area
Site 5 - Building 9-11 Motor Oil Disposal Area
Site 15 - PCB Capacitor Spill, Fire Station No. 1
Site 16 - PCB Capacitor Spill, Pole No. 425
Site 17 - Shore Intermediate Maintenance Activity (SIMA) Motor Oil Disposal Area

The Preliminary Site Inspection (PSI) is based on the results of a limited field program and the synthesis of existing data for the five SI sites. Recommendations concerning the need for additional characterization or mitigation activities at the sites were developed from the collected information.

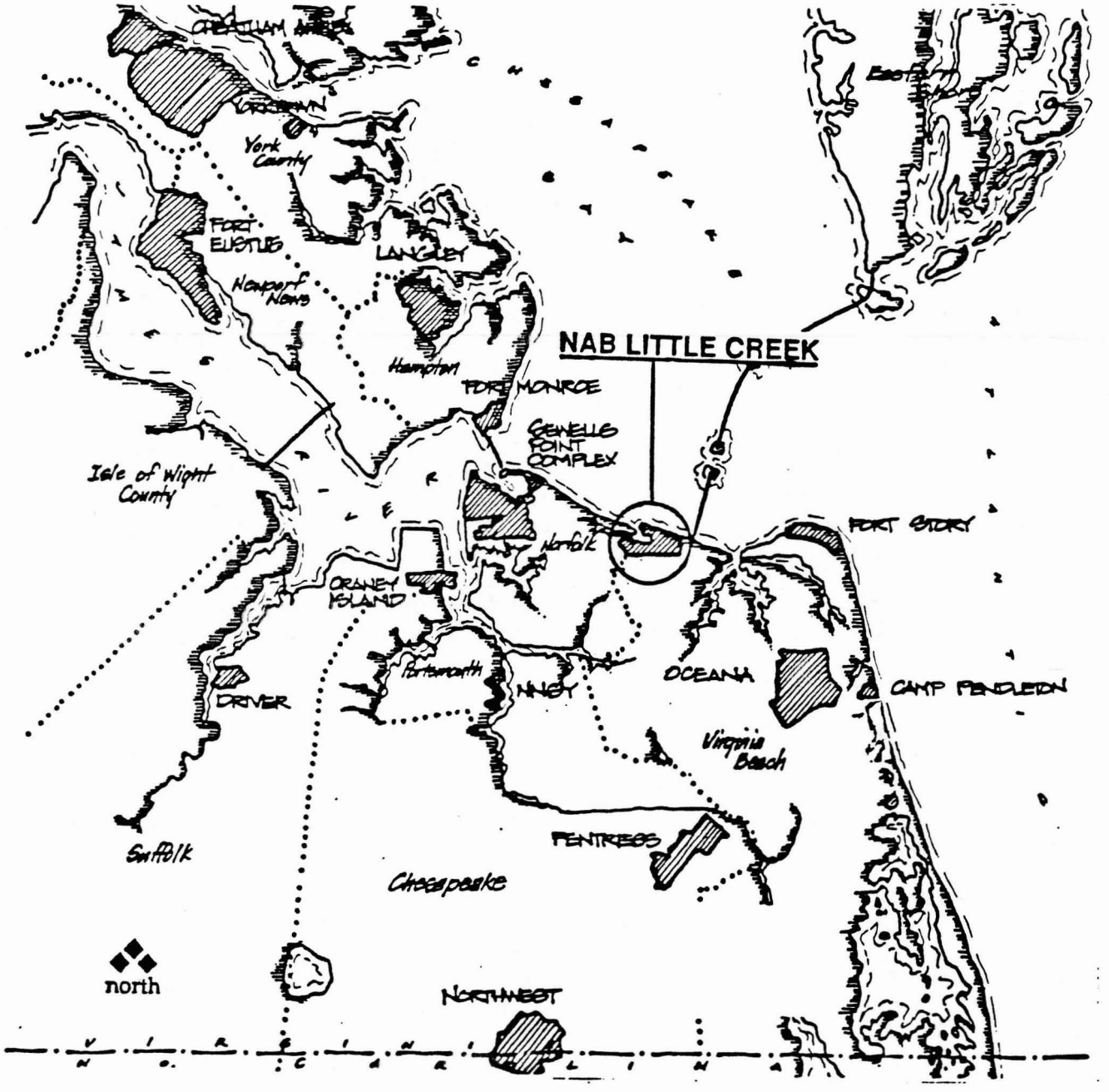
The PSI is organized into three sections. Section 1.0 presents background information concerning the history of the facility as well as the location and description of the five sites. Section 2.0 summarizes the analytical results of sampling conducted during the field program and provides a comparison of Federal and Commonwealth of Virginia water quality criteria with compounds detected at the sites. Recommendations concerning future activities of each of the sites are presented in Section 3.0.

1.1 FACILITY LOCATION

The Naval Amphibious Base Little Creek (NAB Little Creek) is located in the Tidewater region of southeastern Virginia as shown in Figure 1-1. The facility is bounded on the north by the Chesapeake Bay and portions of the facility lie inside the boundaries of the cities of Norfolk and Virginia Beach.

The area surrounding the 2,147-acre facility (Figure 1-2) is low-lying and relatively flat with several fresh water lakes located either on or directly adjacent to NAB Little Creek. Chubb Lake, Lake Bradford, Little Creek Reservoir/Lake Smith, and Lake Whitehurst border the facility. The greatest natural topographic relief at Little Creek is created by the sand dunes which have developed in a narrow band along the Chesapeake Bay.

The base is largely industrial, while land development surrounding the site is primarily suburban and industrial. The industrial development supports the many large shipyards in the area.



Source: Dam Neck Master Plan, 1990

NAB LITTLE CREEK

FIGURE 1 - 1
LOCATION OF NAB LITTLE CREEK

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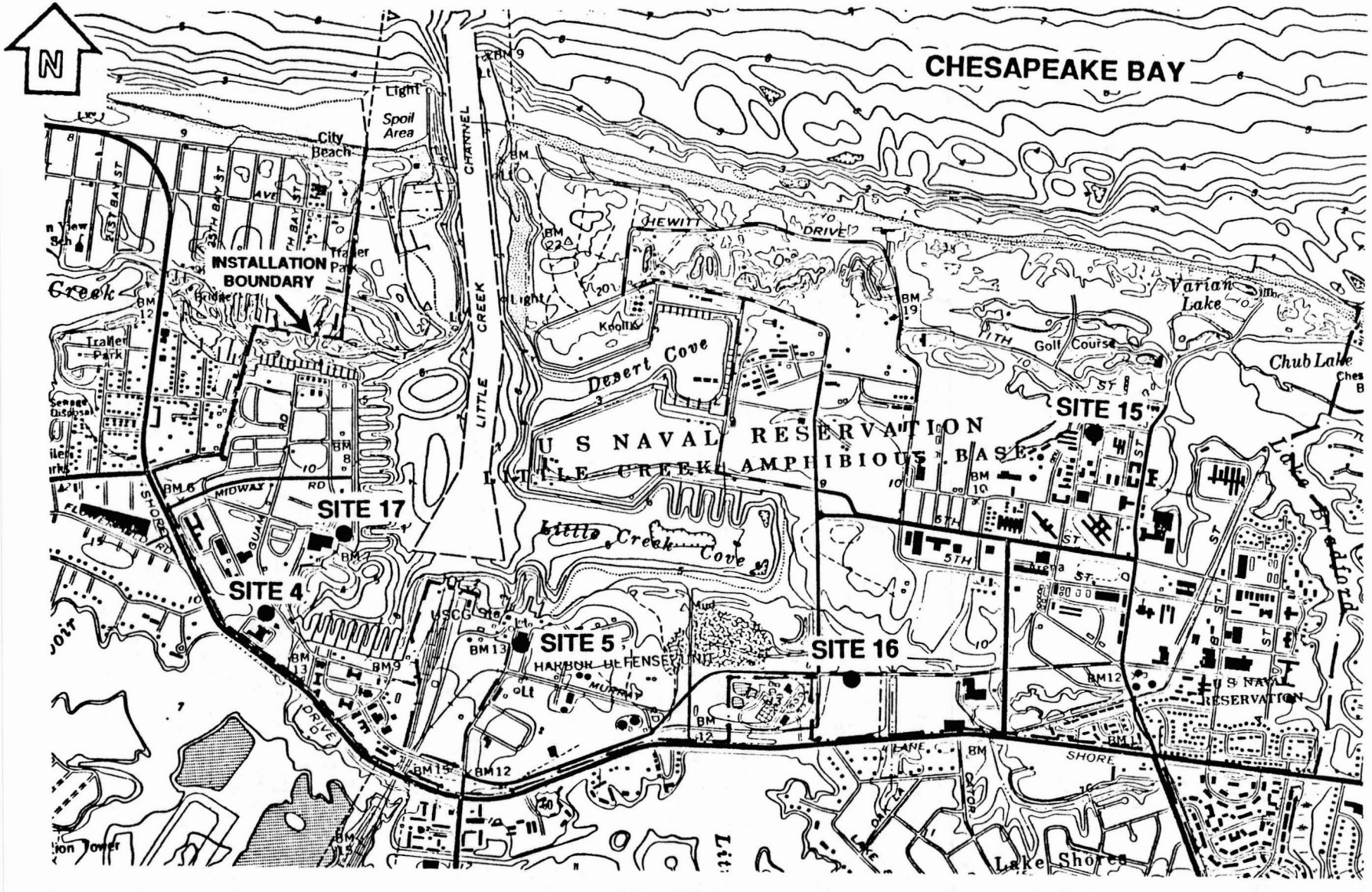

LITTLE CREEK NAB

FIGURE 1-2
LOCATION OF SI SITES

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1.2 BACKGROUND

This section presents a brief background of the Naval Amphibious Base and descriptions of the five SI sites included in the PSI. The numbers assigned to the five sites were designated in the Initial Assessment Study (IAS) (NEESA, 1984).

1.2.1 Facility Mission

The mission of NAB Little Creek is to provide on-base logistic facilities and support services to local commands, organizations, other United States and allied units, homeported ships, and commands of the operating forces to meet the amphibious training requirements of the Armed Forces of the United States.

The NAB Little Creek installation was commissioned on 30 July 1945. The Navy began purchasing land in the area from private estates and the Pennsylvania Railroad just prior to the outbreak of World War II. The first activity to be commissioned was the Amphibious Training Base, which encompassed the southwestern corner of the present base, near Little Creek Harbor. The base's mission was the training of landing craft crews for operational assignments. Over the last fifty years, NAB Little Creek has expanded both in area and mission.

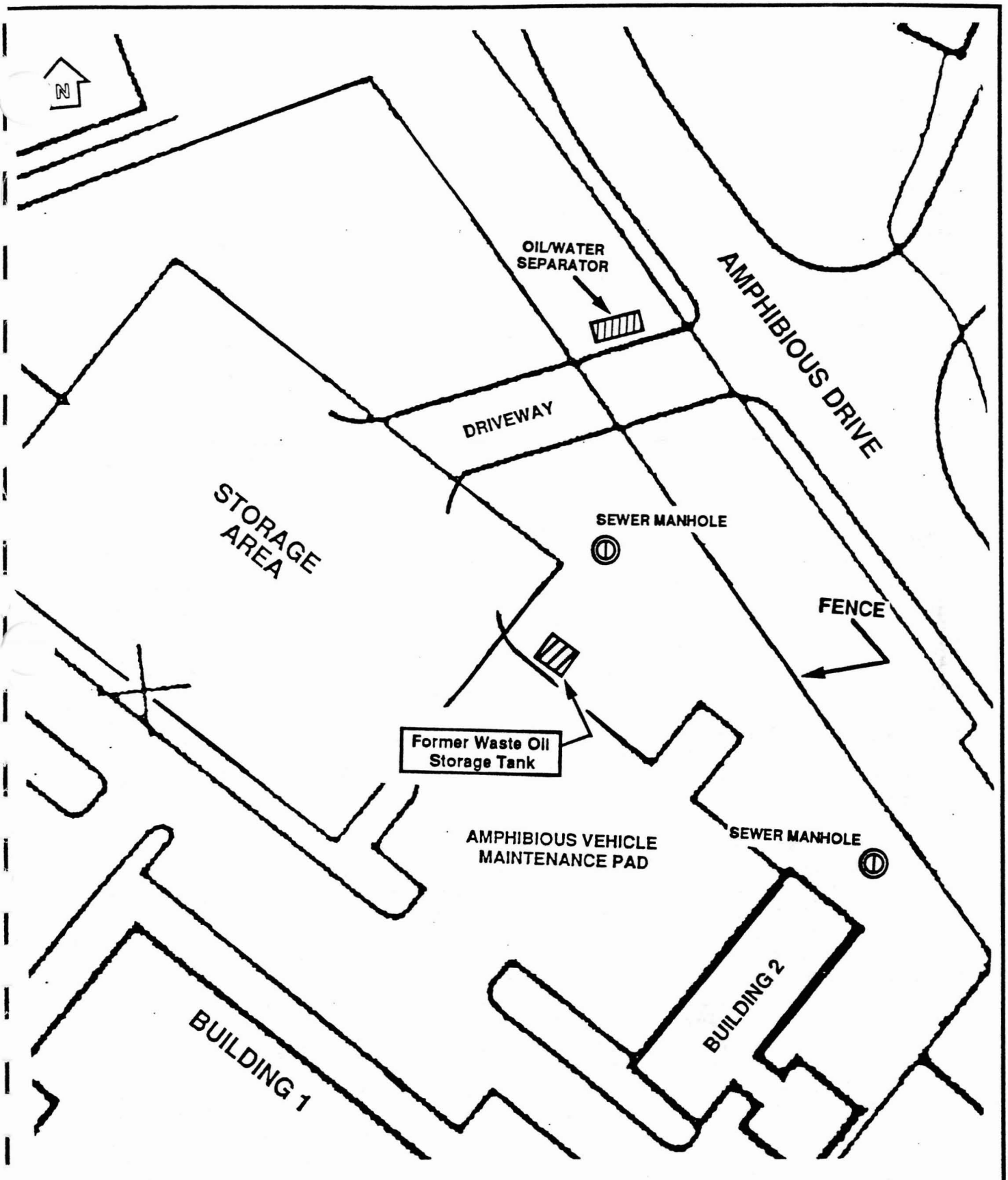
At full complement, NAB Little Creek has 13,650 personnel. The base population increases during the summer, when much of the amphibious training of Navy and Marine Corps reservists occurs. Forty-three ships are homeported at the base.

1.2.2 Site Descriptions

The locations of the five SI sites are shown on Figure 1-2. A discussion of past activities and a physical description of each site is provided in the following paragraphs.

Site 4 - Reserve Center Motor Oil Disposal Area - Site 4 is located in a fenced area, just north of Building 1, and is used as an amphibious vehicle maintenance area (Figure 1-3). Site 4 has been in use since 1967.

Site 4 consists of a storage area and a vehicle maintenance pad. The storage area, shown on Figure 1-3, is a large asphalt pad, approximately 100 feet by 200 feet, and enclosed by a chain-link fence. The amphibious vehicle maintenance pad, located southeast of the storage area, is a concrete-covered area measuring approximately 40 feet by 60 feet which slopes into a drain located at the center of the pad. Water collected in this drain, which is part of the storm sewer system, flows through an oil-water separator. The oil-water separator is located approximately 15 feet northwest of the storage area driveway from Amphibious Drive between the outer fence and the road.



NAB LITTLE CREEK, NORFOLK, VA

FIGURE 1-3
SITE 4 SCHEMATIC

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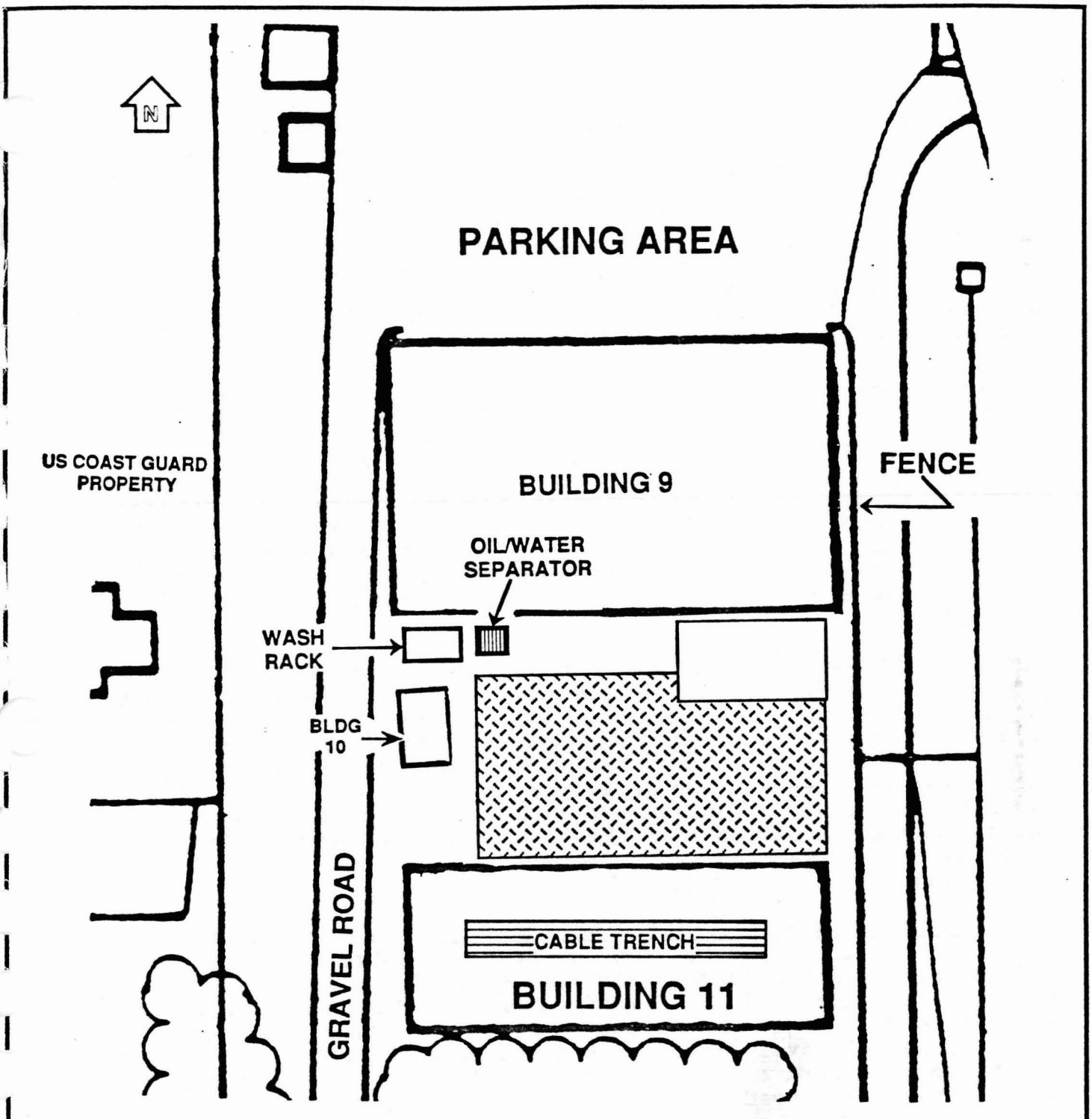
A waste oil underground storage tank was formerly located just north of the northwest corner of the maintenance pad. The tank, as well as the adjacent soil, has been removed; the excavation was backfilled and the surface was regraded and revegetated.

NEESA (1984) reports that, prior to 1981, waste crankcase oils, solvents, and antifreeze were spread on the ground and/or disposed into the storm sewer on the maintenance pad. As stated above, the storm sewer is equipped with an oil/water separator. Historic usage rates for oil are not available, but current rates suggest that about 2,000 gallons of waste oil per year and 50 gallons of antifreeze per year were disposed of either into the storm drain or onto the ground. Assuming operations began in 1967, these rates would result in a cumulative total of 28,000 gallons of oil and 900 gallons of antifreeze (NEESA, 1984).

In 1981, the area was paved and the public works department began collecting spent crankcase oil. In 1984, a new oil-water separator system was installed on the storm sewer drain that collects run-off from the maintenance pad.

Site 5 - Buildings 9-11 Motor Oil Disposal Area - Site 5 consists of the area between Building 9 and 11 (Figure 1-4) and measures approximately 100 feet by 150 feet. There is essentially no topographic relief in this area and drainage from rainfall appears to be to the west southwest past Building 10. A small, concrete-bermed drum storage area (approximately 10 feet by 10 feet) and an oil-water separator are located on the northern side of Site 5, along Building 9. A drain in the middle of the concrete drum storage area is connected to the oil-water separator. The area between the buildings is covered by Marsden matting. This matting is made of hinged, rigid steel panels which are not perforated or otherwise open for the infiltration of precipitation or spilled materials.

Buildings 9 and 11 were used continuously since 1943 by Special Warfare Group 2. In April 1991, both buildings were in the process of being demolished to make way for new facilities, and only the concrete slab foundations were expected to remain. Building 9 was used for motor pool maintenance, including trucks, trailers, and general purpose military vehicles. Used motor crankcase oil from this maintenance shop was reportedly disposed of in the area covered by the Marsden matting between Buildings 9 and 11 (NEESA, 1984). The IAS estimated that 1,230 gallons of oil and antifreeze were disposed by this activity each year. It is presumed that similar quantities were used in the past, since the size of their mission has remained fairly constant. The potential source quantity generated at Site 5 could be as high as 50,000 gallons of oil and antifreeze. There is no visible evidence at the site, based on observations made in December 1990 and April 1991, that would suggest disposal activities of this magnitude had occurred on or near the Marsden matting.



EXPLANATION
Marsden Matting

0 50 Ft

PROXIMATE SCALE

NAB LITTLE CREEK, NORFOLK, VA
FIGURE 1-4 SITE 5 SCHEMATIC
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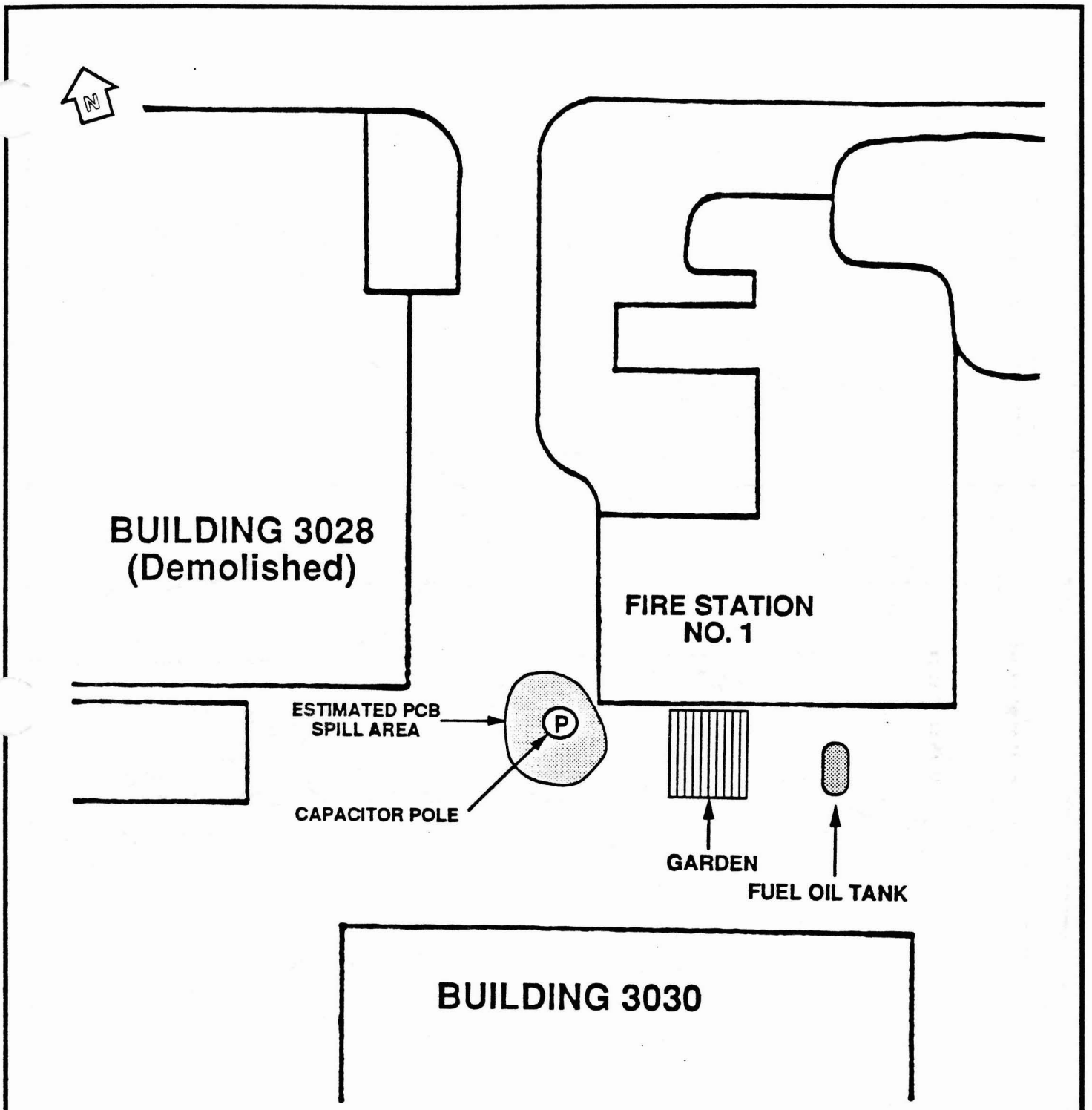
Building 11 was originally built as a cable tank building. The ten 20 by 25 by 8 foot deep cable tanks were backfilled with select fill and capped with a concrete cover in 1969. Three pits near the center of the floor, with openings of 4 by 4 feet (2) and 4 by 8 feet (1) were covered with steel plates. From 1969 until 1981, motor oil, solvents, and antifreeze from engines of boats maintained in Building 11 were disposed into these pits through holes in the steel plates (NEESA, 1984). The IAS reported that 3,285 gallons of oil were generated annually from activities in Building 11. If similar quantities are projected back to 1969, as much as 43,000 gallons may have been disposed of at Site 5.

Site 15 - PCB Capacitor Spill - Fire Station No. 1 - The location of the PCB capacitor spill is behind Fire Station No. 1, as shown in Figure 1-5. The utility pole where the capacitor was formerly attached is located approximately 10 feet southwest of the southwest corner of the Fire Station in a grassy area. A small vegetable garden, presumably maintained by the firemen, is situated along the southern edge of the Fire Station and 15 feet east of the utility pole. A 550 gallon, above-ground heating oil storage tank is located approximately 15 feet east of the garden. Topographic relief in the area is low with a preferred direction for runoff to the southwest.

The cause of the PCB spill was a severe thunderstorm in the early 1980's. Lightning struck an electric utility pole on E Street immediately south of Fire Station No. 1. The charge jumped to a pole behind the fire station and damaged one of the capacitors, resulting in leakage of less than five gallons of dielectric fluid onto the ground beneath the capacitor pole. The damaged capacitor was removed, as was a replacement unit mounted after the accident. The surface soils surrounding the pole were also removed after the spill and there currently is no visible evidence at the site suggesting a spill had occurred.

Site 16: PCB Capacitor Spill - Pole No. 425 - The area of the PCB capacitor spill at Pole No. 425 is shown in Figure 1-6. Pole No. 425 is located approximately 300 feet east of the intersection of Amphibious Drive and Helicopter Road on the south side of Amphibious Drive (12 feet from the road). This area of the facility is relatively level with a preferred direction of runoff to the north toward a swampy area in the woods (approximately 300 feet north of the road). During heavy rainstorms, water ponds in the grassy area (where the pole is located) between Amphibious Drive and the wooded area to the south until it reaches the level of the road; it then drains to the north. An above-ground steam line parallels Amphibious Drive in this area and is located between Pole No. 425 and the woods approximately 25 feet south of Amphibious Drive.



NAB LITTLE CREEK, NORFOLK, VA

FIGURE 1-5
SITE 15 SCHEMATIC

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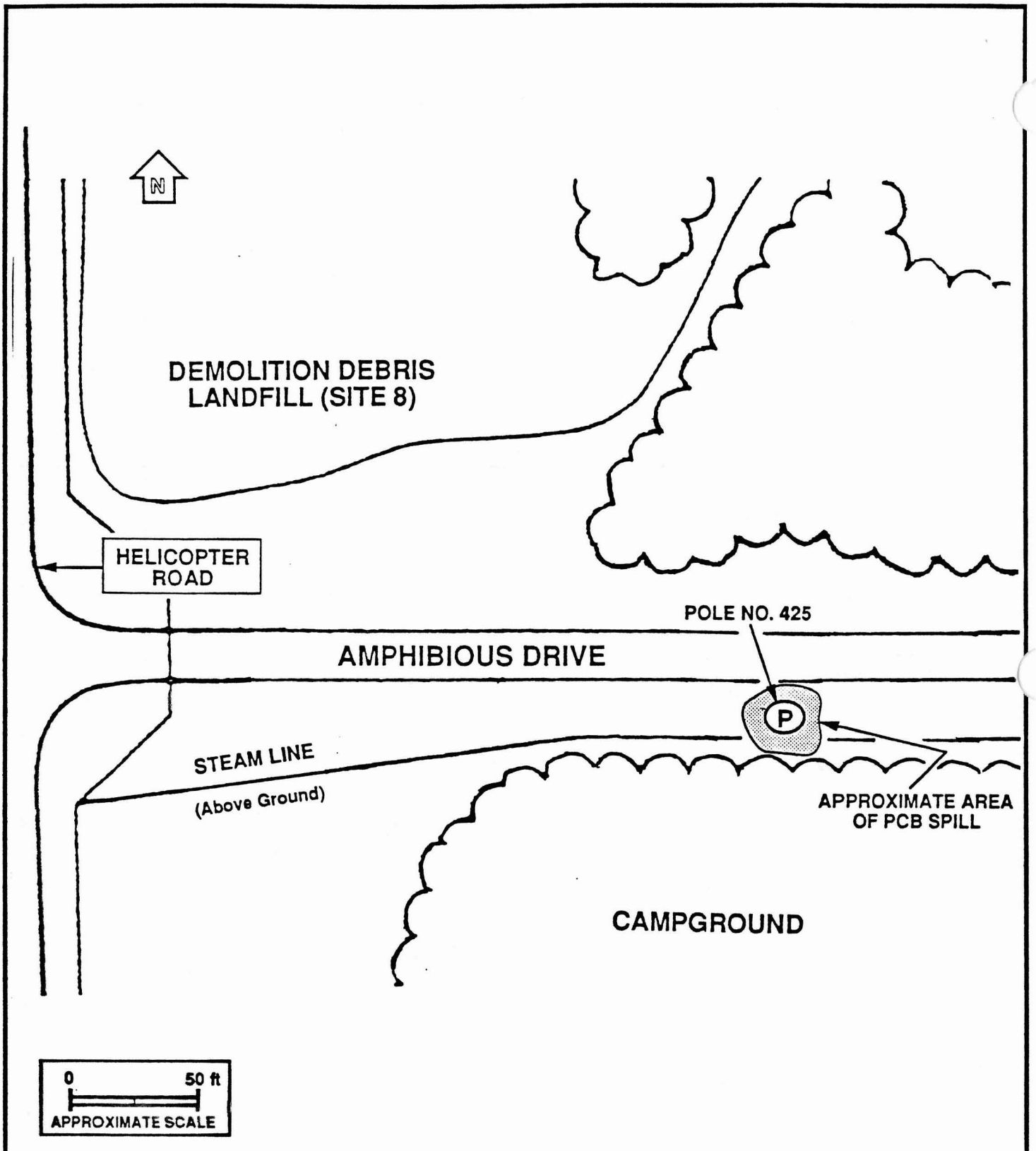

NAB LITTLE CREEK, NORFOLK, VA

FIGURE 1-6
SITE 16 SCHEMATIC

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A campground is located in the wooded area south of Amphibious Drive. Access to the camping area is gained by two driveways located 50 feet east and 50 feet west of Pole No. 425. During installation of the electrical hookup to the campgrounds, a ditch was excavated from Pole No. 425, passing southward through the woods (approximately 40 feet) to the area that had been cleared for the campgrounds. The depth of the ditch is estimated to have been between 2 and 3 feet. After completion of the electrical hookup, the area was regraded and revegetated.

Less than five gallons of dielectric fluid were missing from the capacitor, formerly attached to Pole No. 425, after a lightning strike in the early 1980s (NEESA, 1984). The capacitor has since been removed from the pole, but the pole is still in use. There is no visible evidence currently at the site that would indicate a spill of PCB-laden fluid.

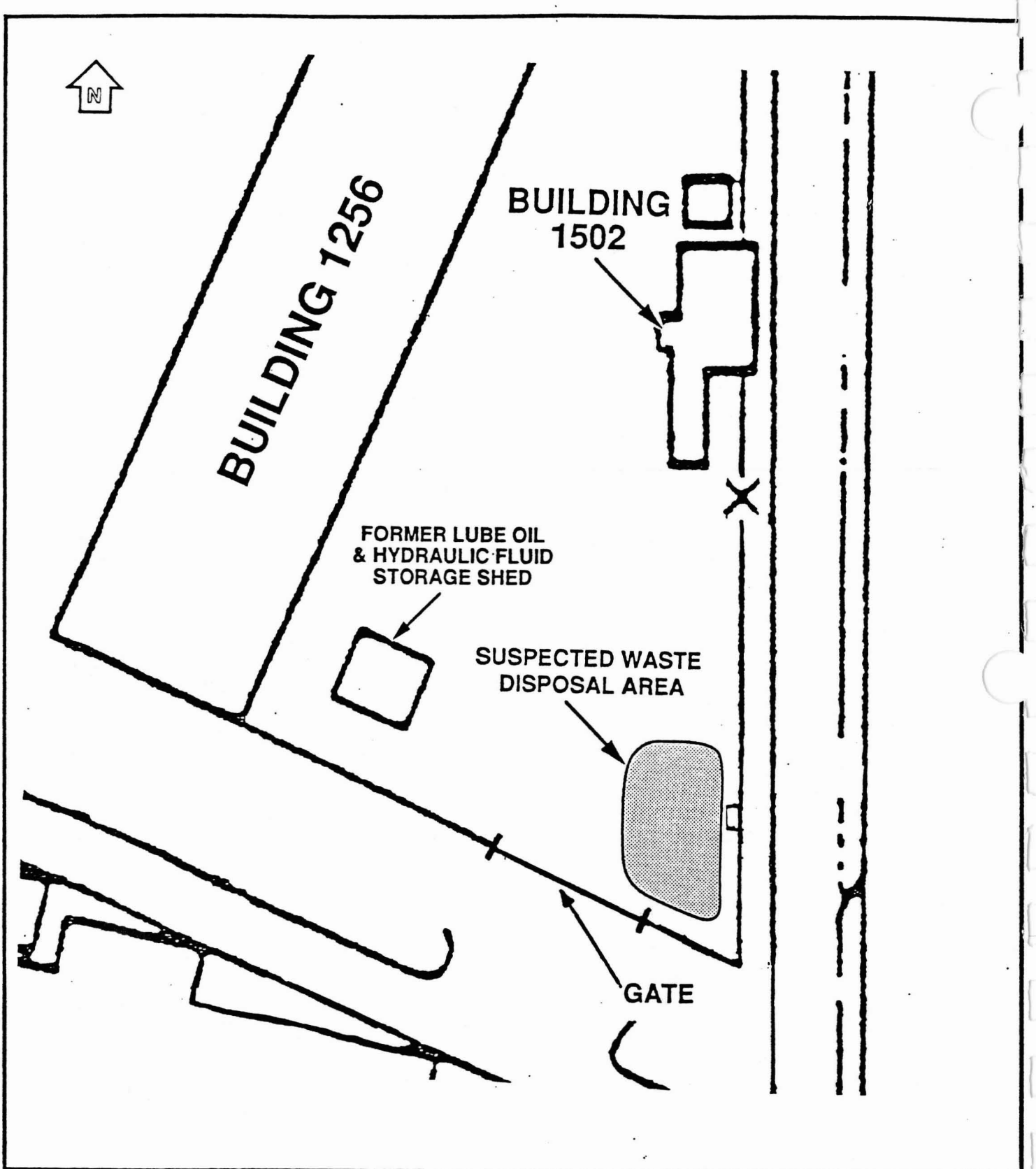
Site 17 - SIMA (Building 1256) Motor Oil Disposal Area - The location of Site 17 is shown in Figure 1-7. This area, which is enclosed by a fence, is a flat yard currently used for storage by SIMA operations. Much of the area inside the fence is covered by concrete or hard packed gravels. Surface drainage from the area is primarily to the south.

Areas of sandy soil stained with oil were found inside the fence of SIMA's transportation shop near Building 1256. This shop has reportedly disposed of approximately 100 gallons of waste motor oil per year from 1949 to 1984 (NEESA, 1984). The affected area is reportedly located east of the former lube oil and hydraulic fuel storage shed (which has now been removed) and apparently resulted from both direct disposal of waste motor oil to the ground and runoff from the storage shed apron. No visible evidence of oil disposal activities of this magnitude was observed during the December 1990 field program or a subsequent site visit in April 1991.

1.3 PREVIOUS INVESTIGATIONS

Prior to the establishment of the Navy Installation Restoration Program in 1986, potential Navy hazardous waste sites were addressed through the Navy Assessment and Control of Installation Pollutants (NACIP) program, which consisted of three phases. Phase 1 was the Initial Assessment Study (IAS) which identified disposal sites and potentially contaminated areas caused by past hazardous substance storage, handling, or disposal practices at Naval facilities. These sites were then individually evaluated with respect to their potential threat to human health or to the environment.

The Initial Assessment Study (Phase I activity) was performed in 1984 on seventeen sites at NAB Little Creek. The study included a records search to gather information about the facility's past missions, industrial processes, waste disposal records, and known



NAB LITTLE CREEK, NORFOLK, VA

FIGURE 1-7
SITE 17 SCHEMATIC

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contamination. An on-site survey was also conducted during the IAS to complete documentation of past operations and disposal practices and to identify potentially contaminated areas. The potential hazard to human health or to the environment was assessed. The need for a Confirmation Study or for immediate mitigating action was recommended for each site. The sites included in this PSI were not among those recommended for a Confirmation Study (Phase II activity) because of the volume or type of material disposed or because there were no identified receptors (NEESA, 1984). Table 1-1 summarizes the findings of the IAS for the five sites considered in the PSI.

Table 1-1
Sites Summary
Little Creek
Preliminary Site Insection

Site Number	Site Name	Period of Operation	Type of Material Disposed	Comments
4	Reserve Center Motor Oil Disposal Area	Until 1981	Waste Oil, Solvents, Antifreeze	Surface Soil Contamination Suspected
5	Building 9-11 Motor Oil Disposal Area	1943 - 1981	Motor Oil	Ground-water & Surface Soil Contamination Suspected
15	PCB Capacitor Spill, Fire Station No. 1	Early 1980's	Dielectric Fluid Spilled	Surface Soil Contamination Suspected
16	PCB Capacitor Spill, Pole No. 425	Early 1980's	Dielectric Fluid Spilled	Surface Soil Contamination Suspected
17	SIMA (Building 1256) Motor Oil Disposal Area	1949 - 1984	Motor Oil, Lube Oil, Hydraulic Fluid	Surface Soil Contamination Suspected

2.0 DISCUSSION OF RESULTS

Environmental samples were collected at all five of the sites considered in this Preliminary Site Inspection Report. Sampling procedures utilized during the field investigation as well as the rationale for the selection of sampling locations were detailed in the Final Work Plan (Ebasco, 1990).

In this section, the results of the sampling program are discussed on a site by site basis. Existing sampling data, where available, are included in the discussion of each site. The reporting of sampling data on figures and tables is limited to contaminant detections only.

2.1. FIELD PROGRAM

A limited field program was conducted as a part of the PSI. The objective of the field program was to gather information concerning the potential contaminants present at the five sites and, if present, the levels of those contaminants. Table 2-1 presents a summary of the field program and the collected samples.

2.1.1 Site 4 - Reserve Center Motor Oil Disposal Area

A total of 16 surface soil samples were collected at the Reserve Center Motor Oil Disposal Area. The sample locations are shown in Figure 2-1. The samples were screened in the field with a photo-ionization detector (HNu) to select samples most likely to be contaminated for lab analysis (i.e., samples yielding higher than background organic vapor readings on the HNu were retained for lab analysis). A second criterion used to select samples for lab analysis was the need to provide sufficient areal coverage for the site. Of the 16 samples initially collected, ten samples were retained for laboratory analyses. Analyses conducted on the samples included Target Compound List (TCL) volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), and lead.

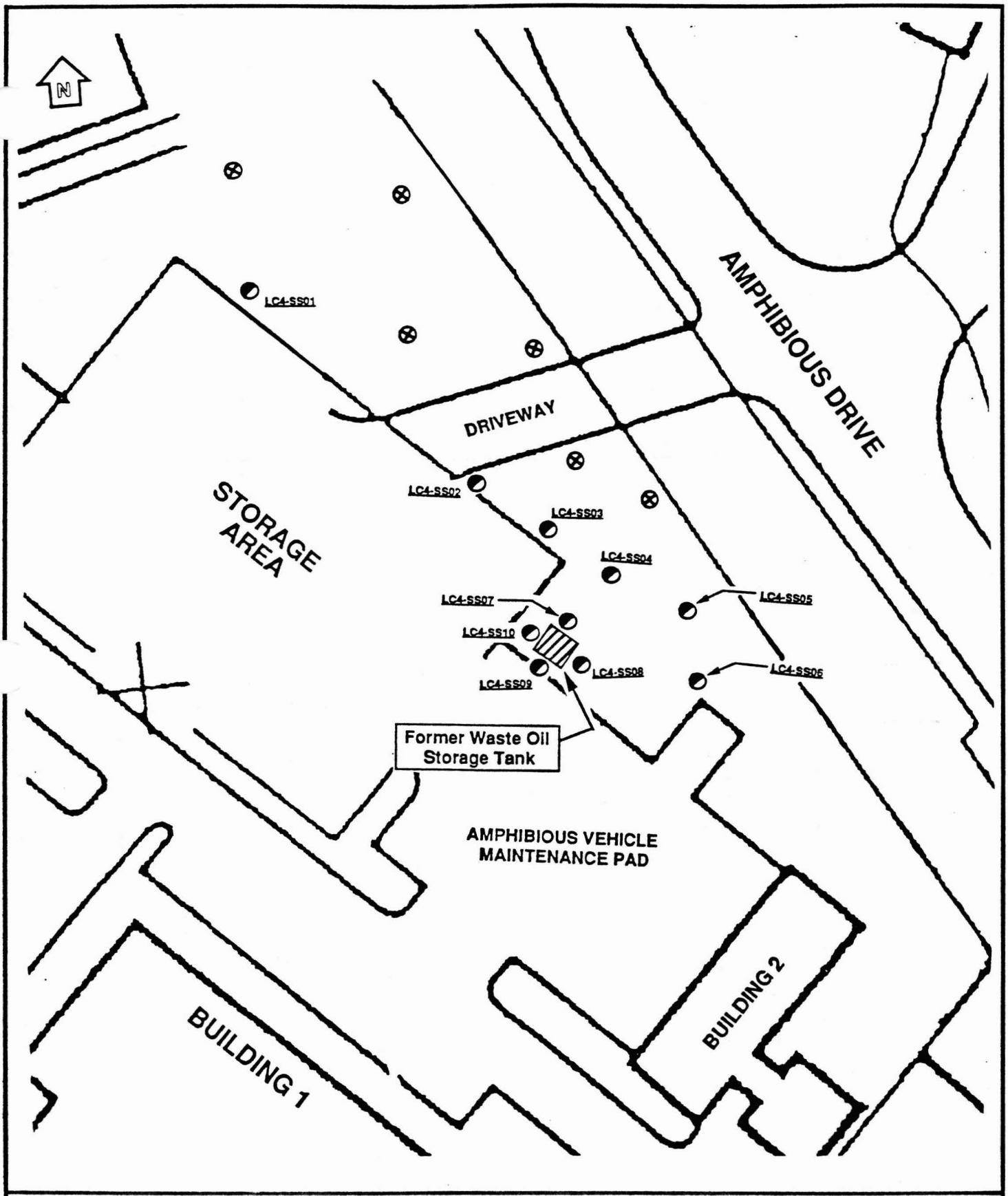
2.1.2 Site 5 - Building 9-11 Motor Oil Disposal Area

The field program conducted at Site 5 included the installing and sampling three monitoring wells. Three groundwater and eight surface soil samples were collected. Monitoring well construction diagrams for the three monitoring wells are presented in Appendix A. The locations of the monitoring wells and surface soil sampling locations are shown in Figure 2-2. The surface soil samples were screened in the field using the HNu. Of the eight soil samples collected, five samples (four and a duplicate) were sent for laboratory analyses. The criteria for selection of Site 5 soil samples to be retained for lab analysis were the same as for Site 4. Analyses conducted on the three groundwater and five surface soil samples were TCL VOCs, TPH, and lead.

Table 2-1
Summary of Field Program
Little Creek
Preliminary Site Insection

Site No.	Site Name	Media Sampled	Total No. of Samples	No. of Analysis TCL VOC	TPH	PCB	Lead
4	Reserve Center Motor Oil Disposal Area	Surface Soil	10	10	10	-	10
5	Building 9-11 Motor Oil Disposal Area	Groundwater	4[a]	4	4	-	4
		Surface Soil	5[a]	5	5	-	5
15	PCB Capacitor Spill, Fire Station No. 1	Surface Soil	6	-	-	6	-
16	PCB Spill, Pole No. 425	Surface Soil	5[a]	-	-	5	-
17	SIMA (Building 1256) Motor Oil Disposal Area	Surface Soil	4	4	4	-	4

a = Includes one duplicate
TCL = Target Compound List
VOC = Volatile Organic Compound
TPH = Total Petroleum Hydrocarbons


N
LC4-SS01
AMPHIBIOUS DRIVE
DRIVEWAY
LC4-SS02
LC4-SS03
LC4-SS04
STORAGE AREA
LC4-SS07
LC4-SS05
LC4-SS10
LC4-SS08
LC4-SS06
LC4-SS09
Former Waste Oil Storage Tank
AMPHIBIOUS VEHICLE MAINTENANCE PAD
BUILDING 1
BUILDING 2
0
20 Ft
Approximate Scale
EXPLANATION
Sample retained for Analysis
Sample collected But Not Retained
NAB LITTLE CREEK, NORFOLK, VA
FIGURE 2-1
SITE 4 SAMPLING LOCATIONS
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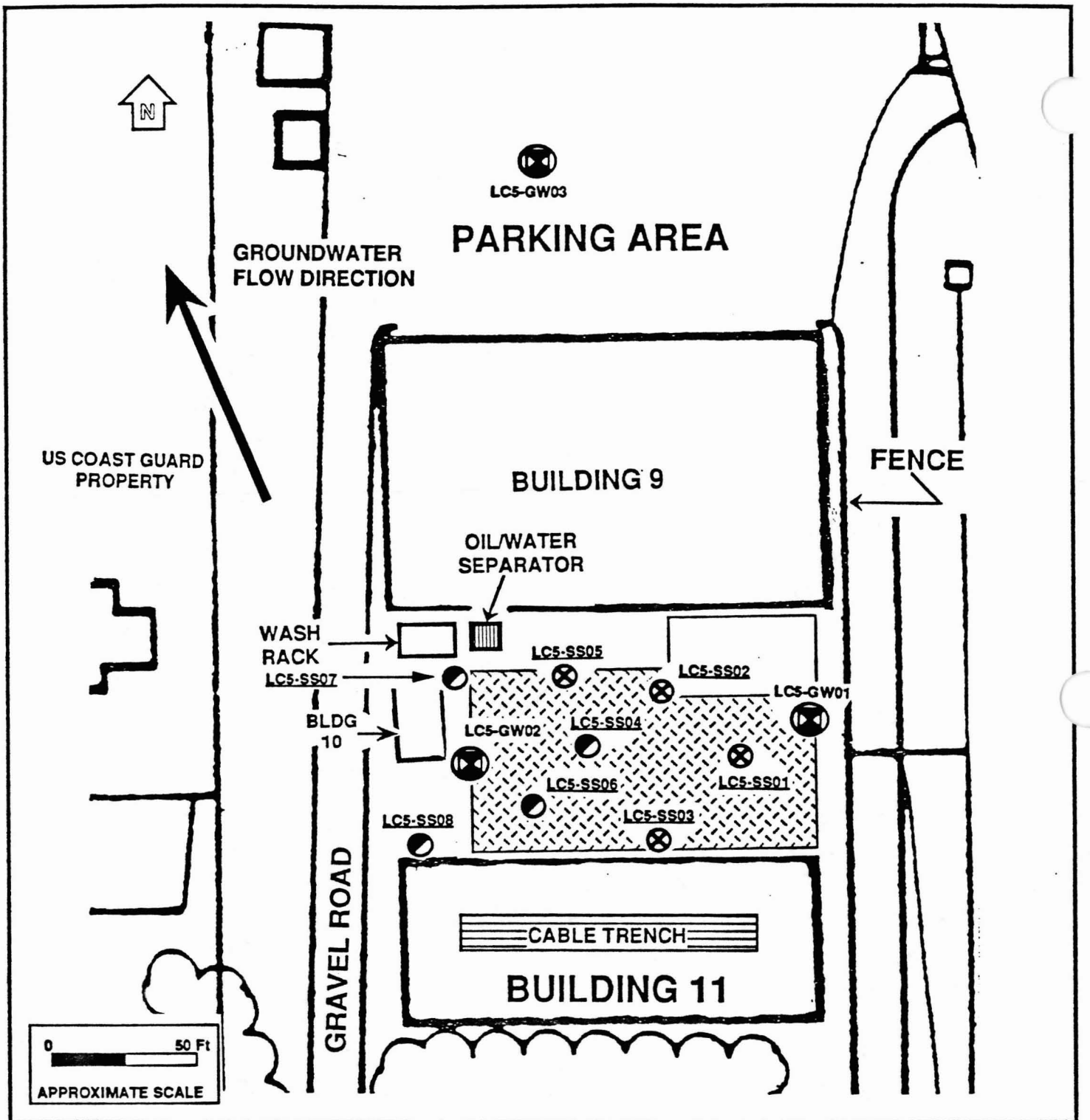

EXPLANATION

- Marsden Matting
- Sample Retained for Analysis
- Sample Collected But Not Retained
- Monitoring Well

NAB LITTLE CREEK, NORFOLK, VA

FIGURE 2-2
SITE 5 SAMPLING LOCATIONS

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2.1.3 Site 15 - PCB Capacitor Spill, Fire Station No. 1

Six surface soil samples were collected in the vicinity of the PCB capacitor spill at Site 15. One of the samples was collected away from the spill area to serve as background. The locations from which the surface soil samples were collected is shown in Figure 2-3. The soil samples were analyzed using USEPA Method 8080, which quantifies the eight PCB Aroclors most commonly used in dielectric fluid and other electrical applications. These Aroclors include Nos. 1016, 1221, 1232, 1242, 1248, 1254, and 1260.

2.1.4 Site 16 - PCB Capacitor Spill, Pole No. 425

A total of five surface soil samples (four and a duplicate) were collected at Site 16. The sampling locations are shown in Figure 2-4. The soil samples were analyzed for PCBs in accordance with USEPA Method 8080.

2.1.5 Site 17 - SIMA (Building 1256) Motor Oil Disposal Area

Eight surface soil samples were collected from the motor oil disposal area at Site 17. The locations from which the samples were collected are shown in Figure 2-5. Field screening was accomplished using the same methods and criteria described at Site 4 to reduce the total number of samples retained for laboratory analysis. Of the eight samples initially collected, four samples were sent for laboratory analyses. Analyses conducted on the samples included TCL VOCs, TPH, and lead.

2.2 SITE RESULTS

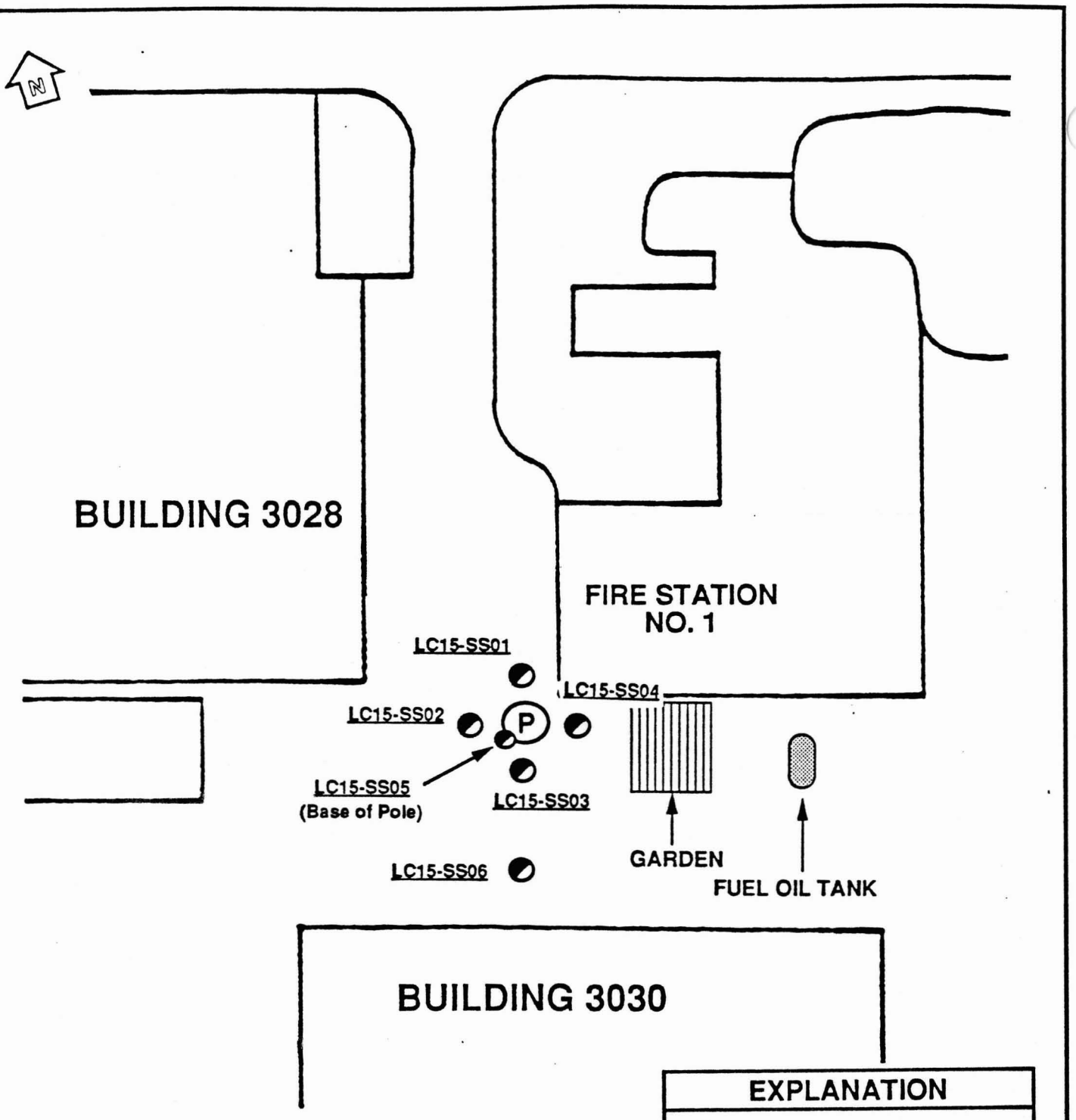
This section presents the results of the sampling program conducted at the five Little Creek sites. The data tables list only those compounds that were present above detection limits. A summary of the method detection limits for the volatile organic compound analysis is presented in Appendix C. Detection limits for lead, TPH, and PCBs are shown on the summary tables.

2.2.1 Site 4 - Reserve Center Motor Oil Disposal Area

Ten surface soil samples were analyzed from Site 4. Analyses included TCL VOCs, TPH, and lead. The results of the analytical program at Site 4 are summarized in Table 2-2. Sampling locations are shown in Figure 2-1.

TCL VOCs

Three volatile organic compounds were detected in the surface soil samples. Methylene chloride, detected in five of the ten samples in concentrations ranging from 3J ug/kg (4-SS10) to 16 ug/kg (4-SS03), is a common laboratory contaminant and is not considered to be present at the site. The two other VOCs detected were benzene and trichloroethene (TCE). Benzene, a fuel-related



NAB LITTLE CREEK, NORFOLK, VA

FIGURE 2-3
SITE 15 SAMPLING LOCATIONS

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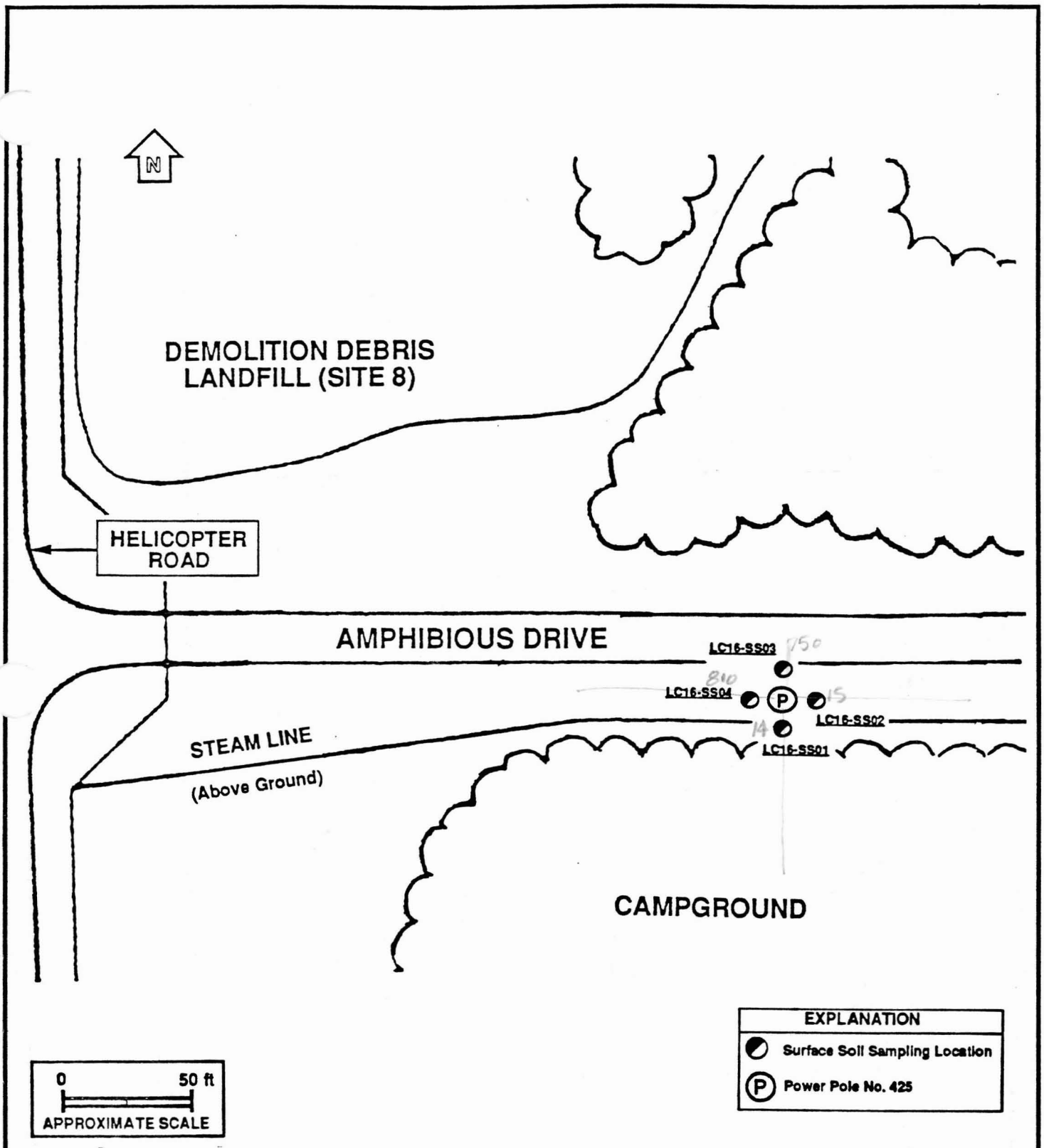

NAB LITTLE CREEK, NORFOLK, VA

FIGURE 2-4
SITE 16 SAMPLING LOCATIONS

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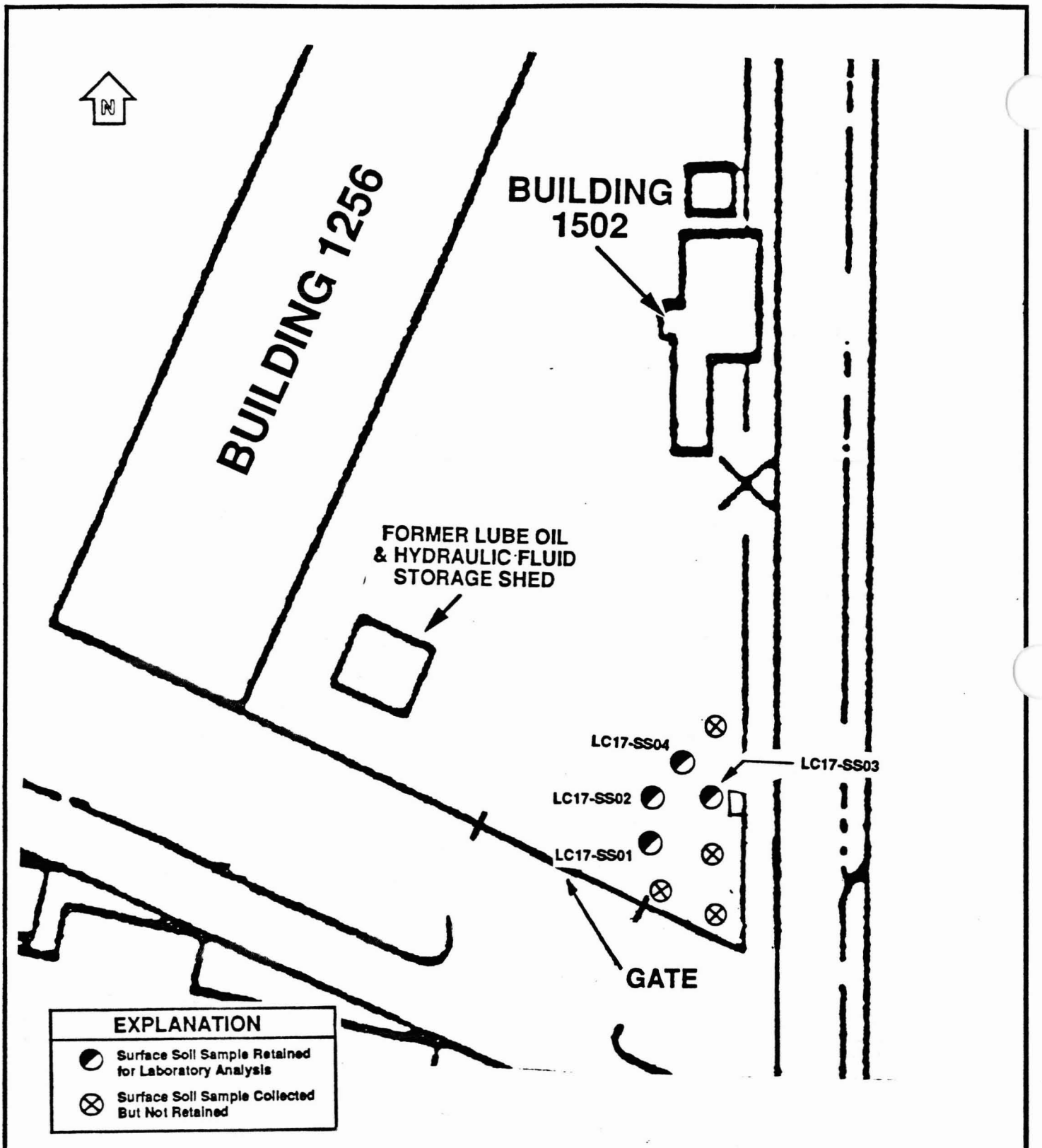

NAB LITTLE CREEK, NORFOLK, VA

FIGURE 2-5
SITE 17 SAMPLING LOCATIONS

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TABLE 2-2

SITE 4 - RESERVE CENTER MOTOR OIL DISPOSAL AREA
LITTLE CREEK PRELIMINARY SITE INSPECTION

		SURFACE SOILS									
CONTAMINANT	UNITS	4-SS01	4-SS02	4-SS03	4-SS04	4-SS05	4-SS06	4-SS07	4-SS08	4-SS09	4-SS10
Methylene Chloride	ug/kg	6B	8B	16B	8B	10B	<6	<6	<5	<6	3J
Benzene	ug/kg	<6	<6	<6	<6	<6	<6	<6	<5	4J	<8
Trichloroethene	ug/kg	<6	<6	2J	<6	<6	<6	<6	<5	<8	<8
TPH	mg/kg	<31	498	<35	6070	<32	<32	<31	76	651	<31
Lead	mg/kg	11	7.0	28	32	18	53	21	30	15	11

Notes: J = Estimated Result
B = Compound Also Detected in QC Blank
R = Unreliable Result

Less than (<) results indicate the compound was not detected at the quantitation limit shown.

See Appendix C for detection limits for the complete list of volatile organic analytes.

contaminant, was detected in only one sample (4-SS09) at an estimated concentration of 4J ug/kg. TCE, a common degreasing solvent, was also detected in one sample (4-SS03) at an estimated concentration of 2J ug/kg.

TPH

Four of the ten samples collected had detections of total petroleum hydrocarbon concentrations greater than the detection limit of 31 to 34 mg/kg. The maximum detection of TPH was 6070 mg/kg at sampling location 4-SS04. The geometric mean to the TPH detections was 575 mg/kg. There was no overall pattern for the distribution of concentrations, except that the majority of the detections were adjacent or in close proximity to the former location of the waste oil storage tank. The detections of TPH at sampling locations 4-SS02, 4-SS04 and 4-SS09 are elevated and indicate the presence of potentially significant levels of hydrocarbon. The lack of significant detections of volatile organic compounds in the soil samples suggests that the particular compound(s) responsible for the elevated TPH detections are either semivolatile organic compounds or non-TCL volatiles, such as alkanes, pentanes or methanes.

Lead

Detectable concentrations of lead were present in each of the ten samples analyzed from Site 4. The observed range of detected concentrations for lead was 7.0 mg/kg (at 4-SS02) to 53 mg/kg (at 4-SS06). The average detected concentration of lead was 22.6 and the geometric mean of the values reported was 19.5. The distribution of lead detections does not correlate with the presence of TPH or volatiles, which should occur if the lead was related to a leaded gasoline or waste oil spill.

Table 2-3 presents "background" lead data for soils as reported in the literature. For the entire United States, the concentration of lead in soils varies between 2 and 200 mg/kg (Kabata-Pendias and Pendias, 1984). Shacklett and Boerngen (1984) report a range of lead concentrations for eastern Virginia as 0 to 10 mg/kg. Given the limited amount of soil data from NAB Little Creek, the actual, site-specific background concentration for lead cannot be established.

The presence of elevated lead in surface soil at Site 4 (and elsewhere at NAB Little Creek) could be related to contaminated run-off from adjacent roadways and parking areas associated with vehicles that use leaded gasoline. Another source of lead at Site 4 and the installation in general is dry deposition of lead particulate contained in vehicle exhausts. The "background" lead concentrations would thus be a function of location, with soil adjacent to heavily traveled roadways and parking areas expected to have higher lead concentrations in the surface soil than those associated with soil in less developed or less traveled areas.

TABLE 2-3

CRITERIA AND BACKGROUND SUMMARY
LITTLE CREEK PRELIMINARY SITE INSPECTION

CONTAMINANT	MEDIA	LEVEL	UNITS	SOURCE
Lead	Groundwater	50	ug/l	MCL
	Groundwater	50	ug/l	AWQC - Ingestion of Drinking Water
	Groundwater	50	ug/l	AWQC - Ingestion of Drinking Water and Aquatic Organisms
	Groundwater	50	ug/l	Virginia Standards for Surface Waters, Drinking Water, and Fish Consumption
TPH	Groundwater	1	mg/l	Virginia Groundwater Standard
1,1-Dichloroethane	Groundwater	--	--	No Criteria Available at State or Federal Level
Lead	Soil	0-10	mg/kg	Background Range for Eastern Virginia (Shacklett and Boernger, 1984)
	Soil	2.0-200	mg/kg	Background Range for United States (Kabutas-Pendias and Pendias, 1984)
TPH	Soil	100	mg/kg	Virginia Dept. of Waste Management Contaminated Soil Disposal Guidance (4/6/91)
PCB	Soil	10	mg/kg	Industrial (Restricted) Areas - EPA/540/G-90/007
	Soil	1	mg/kg	Residential Areas - EPA/540/G-90/007

Notes: TPH = Total Petroleum Hydrocarbons
MCL = Maximum Contaminant Level
AWQC = Ambient Water Quality Criteria

2.2.2 Site 5 - Buildings 9-11 Motor Oil Disposal Area

Investigation activities conducted at Site 5 included the analysis of three groundwater samples and four surface soil samples. Duplicate samples, one for each media, were also collected and analyzed at the site. Analyses conducted on both the groundwater samples and the surface soil samples included TCL VOCs, TPH, and lead. The groundwater and surface soil sampling data are summarized in Table 2-4. The sampling locations are shown on Figure 2-2.

TCL VOCs

Only one detection of a VOC was reported from the four groundwater samples analyzed. The solvent 1,1-dichloroethane (1,1-DCA) was detected in sample 5-GW2 at a concentration of 23.2 ug/l. The detection limit for 1,1-DCA (and most of the other volatile organic analytes) was 5 ug/l. It is reportedly used as a metal degreasing agent, in paint or finish removers, and as a component of antiknock gasoline (Verschueren, 1983). Given these uses, it is likely that the 1,1-DCA detected is an actual site contaminant.

The extent of the potential groundwater contamination cannot be definitively established with available data. Groundwater at the site flows to the north, nearly parallel to a line drawn between monitoring wells 5-GW01 and 5-GW03. This groundwater flow pattern suggests that the lateral extent of 1,1-DCA groundwater contamination has been approximately defined by the lack of detectable concentrations in monitoring wells 5-GW01 and 5-GW03. However, the downgradient extent of the contamination (i.e., in the direction of groundwater flow) cannot be determined. Additionally, the lack of 1,1-DCA detections in the surface soil adjacent to monitoring well 5-GW02 suggests that the detection of 1,1-DCA in the groundwater is not likely the result of a spill of the solvent. Commonwealth of Virginia and Federal criteria are not available for 1,1-DCA.

Two volatile organic compounds were detected in four of the five surface soil samples analyzed. Both compounds, acetone and methylene chloride, are suspected to be the result of either the decontamination procedure or laboratory contamination. Acetone is used during the decontamination of sampling equipment in the field and its detections are not considered to be representative of site conditions. Similarly, detections of methylene chloride, a compound used during sample extraction in the laboratory, are not representative of site conditions.

TPH

Total petroleum hydrocarbon analyses were conducted on the four groundwater samples collected at Site 5. No detections of TPH above the detection limit of 1.0 mg/l were reported.

TABLE 2-4

SITE 5 - BUILDINGS 9-11 MOTOR OIL DISPOSAL AREA
LITTLE CREEK PRELIMINARY SITE INSPECTION

		GROUNDWATER			
CONTAMINANT	UNITS	5-GW01	5-GW01 F.DUPL	5-GW02	5-GW03
1,1-Dichloroethane	ug/l	<0.1	<0.1	23.2	<0.1
TPH	mg/l	<1.0	<1.0	<1.0	<1.0
Lead	ug/l	9.2	9.6	24	15

		SURFACE SOIL				
CONTAMINANT	UNITS	5-SS04	5-SS06	5-SS07	5-SS07 F.DUPL	5-SS08
Methylene Chloride	ug/kg	7B	8B	2B	3B	<6
Acetone	ug/kg	26B	16B	31B	34B	<11
TPH	mg/kg	73.3	89.9	89.3	96.6	94.0
Lead	mg/kg	4.1	8.6	1.8	3.3	4.3

Notes: J = Estimated Result
B = Detected in Blank

Variations in significant figures of analytical results are due to reporting by laboratory.

The analytical results from the five surface soil samples revealed that all samples contained detectable concentrations of TPH. The detected concentrations of TPH were uniform across the site, ranging from 73.3 mg/kg (at 5-SS04) to 96.6 mg/kg (field duplicate at 5-SS07). These results indicate that the presence of hydrocarbons in the soil between Buildings 9 and 11 is evenly distributed.

Lead

Groundwater samples collected at the site contained detectable concentrations of lead. Detected concentrations of lead ranged from a maximum of 24 ug/l at 5-GW02 to a minimum of 9.2 ug/l at 5-GW01.

All detections of lead in the groundwater are below the current Maximum Contaminant Level (MCL) established in the Safe Drinking Water Act for lead, which is 50 ug/l. (Under a recently promulgated EPA rule, the MCL will be lowered to 15 ug/l, effective December 1992.) The maximum detection of lead correlates with the occurrence of 1,1-DCA (i.e., monitoring well 5-GW02). Concentrations of lead may also be due to suspended sediment in the sample.

Lead was also present at detectable concentrations in all five of the surface soil samples collected between Buildings 9 and 11. Detected concentrations ranged from 1.8 mg/kg at sampling location 5-SS07 to 8.6 mg/kg at 5-SS06, with a geometric mean of 4.1 mg/kg. These low concentrations of lead are within published background ranges for eastern Virginia.

2.2.3 Site 15 - PCB Capacitor Spill, Fire Station No. 1

Six surface soil samples were collected adjacent to the pole at Fire Stations No. 1 and analyzed for PCBs. The results of the analyses are summarized in Table 2-5 and the sampling locations are shown on Figure 2-3.

Two detections of PCBs were reported at the site. Aroclor 1248 was present in samples 15-SS04 and 15-SS05 at low levels (7100 and 1200 ug/kg, respectively). Previous soil sampling at the Fire Station in 1981 reported a detection of 170,601 ppm PCBs (the specific Aroclor was not identified).

The precise location and depth from which this 1981 sample was collected is not known. The results of the 1990 sampling, however, contained no detections of this magnitude. The action level for PCBs in soils is 50,000 ug/kg and sampling data from the 1990 sampling are well below this level.

TABLE 2-5

ANALYTICAL RESULTS
PCB SPILLS
LITTLE CREEK PRELIMINARY SITE INSPECTION

Site 15:
Fire Station No. 1

		SURFACE SOIL					
COMPOUND	UNITS	15-SS01	15-SS02	15-SS03	15-SS04	15-SS05	15-SS06
PCB Aroclor 1248	ug/kg	<54	<57	<60	7100	1200	<57

Site 16:
Drive Pole No. 1

		SURFACE SOIL					
COMPOUND	UNITS	16-SS01	16-SS02	16-SS03	16-SS04	16-SS04 F.DUPL.	F.BLANK (ug/l)
PCB Aroclor 1242	ug/kg	14000	15000	750000	810000	590000	<0.58

Notes: F.DUPL. = Field Duplicate
F.BLANK = Field Blank

Less than (<) values indicate the compound was not detected at the quantitation limit shown.

2.2.4 Site 16 - PCB Capacitor Spill, Pole No. 425

Five surface soil samples (including one duplicate) from Site 16 were analyzed for PCBs. The results of the analyses are summarized in Table 2-5 and the sampling locations are shown on Figure 2-4.

Detectable concentrations of PCBs were present at all four sampling locations. Samples collected at 16-SS01 and 16-SS02 contained relatively low concentrations (14,000 and 15,000 ug/kg) of Aroclor 1242. Significantly higher concentrations of Aroclor 1242 were detected at sampling locations 16-SS03 and 16-SS04 (750,000 and 610,000 ug/kg, respectively), located to the north and west of the Pole No. 425. The duplicate sample collected at location 16-SS04 contained 590,000 ug/kg of Aroclor 1242.

Sampling for PCBs was conducted at the site in 1981. A detection of PCBs (the Aroclor was not specified) was reported at a concentration of 1,000 ppm (1,000,000 ug/kg). The precise location and depth from which this sample was collected is not known.

2.2.5 Site 17 - SIMA (Building 1256) Motor Oil Disposal Area

Four surface soil samples were analyzed from Site 17. Analyses were conducted for TCL VOCs, TPH, and lead. The results of the analyses are summarized in Table 2-6. Locations sampled at Site 17 are shown in Figure 2-5.

TCL VOC

Two volatile organic compounds, methylene chloride and acetone, were detected at the site. Methylene chloride, a common laboratory contaminant, was detected in every sample at concentrations ranging from 8 to 20 ug/kg. Detections of methylene chloride are attributed to laboratory contamination and are not considered to be representative of existing site conditions. Acetone, which was detected in sample 17-SS03 at a concentration of 28 ug/kg, is used during the decontamination of sampling equipment. The detection of acetone is not considered to be representative of existing site conditions. No other volatile organic compounds were detected above the reported detection limits of 5-12 ug/kg (See Appendix C).

TPH

Detectable concentrations of total petroleum hydrocarbons were present in one of the four surface soil samples collected at the site. Samples 17-SS01 contained 2750 mg/kg of TPH. The occurrence of TPH, which is elevated relative to Virginia's guidance level of 100 mg/kg, also corresponds with the highest detected concentration of lead (discussed below) in the surface soil. Sample 17-SS01 was collected from a small, oil-stained area (less than 4 square feet) which was the only visibly stained area at the site.

TABLE 2-6

SITE 17 - RESERVE CENTER MOTOR OIL DISPOSAL AREA
LITTLE CREEK PRELIMINARY SITE INSPECTION

		SURFACE SOIL			
CONTAMINANT	UNITS	17-SS01	17-SS02	17-SS03	17-SS04
Methylene Chloride	ug/kg	20B	8B	10B	8B
Acetone	ug/kg	<11	<11	28B	<12
TPH	mg/kg	2750	<32	<32	<34
Lead	mg/kg	57	7	22	7

Note: B = Detected in Blank

Less than (<) values indicate the analyte was not detected at the quantitation limit shown.

A complete listing of detection limits for all volatile organic compounds is presented in Appendix C.

Lead

Lead was present in detectable concentrations in all four surface soil samples collected adjacent to Building 1256. Detected concentrations ranged from 7.0 mg/kg at sampling location 17-SS02 to 57 mg/kg at 17-SS01, with a geometric mean of 14.6 mg/kg. The concentrations of lead reported at locations 17-SS01 and 17-SS03 were elevated relative to the literature-derived values for soils in eastern Virginia (1-10 mg/kg).

3.0 RECOMMENDATIONS

This sections presents recommendations concerning future activities at the five sites considered in this Preliminary Site Inspection. The recommendations are based on the review of existing data for the sites (IAS, NEESA, 1984), the observations made during site visits and the field program, the analytical results of the sampling program, and the consideration of potential receptors. Table 3-1 presents a summary of the recommendations given in this section.

3.1 SITE 4 - RESERVE CENTER MOTOR OIL DISPOSAL AREA

No further action is recommended for the Reserve Center Motor Oil Disposal Area. The results of the sampling program indicate that no hydrocarbon-related volatile organic compounds are present in the surface soils adjacent to the former motor oil disposal area. Three detections of TPH in excess of Virginia's 100 ppm TPH guidance level were recorded. One of these detections (4-SS09) was from a sample collected adjacent to the waste oil storage tank which was subsequently removed from the site. Excavation and removal of the tank included removal of the TPH-contaminated soils immediately surrounding the tank lid and from which sample 4-SS09 was collected. The other two detections of TPH were reported next to the storage area asphalt parking lot (4-SS02) and adjacent to a small tar pile (4-SS04) apparently left over from an earlier sealing of the storage area parking lot.

The presence of elevated TPH concentrations in surface soils adjacent to hydrocarbon sources is not unusual. Given that no VOCs were present at these locations, the TPH detections were probably related to heavy hydrocarbons associated with the asphalt parking lot.

A single detection of trichloroethene (TCE) at an estimated concentration of 2 ug/kg was also reported at the site. TCE was not detected in any of the other nine samples collected at the site and its detection is probably spurious.

The presence of potentially elevated lead concentrations in surface soils at Site 5 does not correlate with the occurrence of either TPH or volatile organics, indicating it is probably not related to a spill of fuel or oil. The true "background" concentration range of lead at NAB Little Creek is not known, and therefore it is possible that the concentrations detected at Site 4 are within this range. The most likely sources of lead at Site 4 (and elsewhere on the installation) is run-off from roads and parking areas and the deposition of airborne lead particulate from vehicle exhausts. As a result, the occurrence of localized areas with slightly elevated lead concentrations in surface soil is likely to be a widespread phenomena.

Table 3-1
Summary of Recommendations
Little Creek
Preliminary Site Inspection

Site No.	Site Name	Results of Analytical Program	Recommendations
4	Reserve Center Motor Oil Disposal Area	No VOCs detected; lead levels slightly elevated but site background not determined; isolated TPH detection not related to oil dumping	No further action
5	Building 9 - 11 Motor Oil Disposal Area	Surface Soil: No VOCs detected; lead levels within acceptable ranges; uniform detections of TPH below 100 ppm guidance level Groundwater: Single detection of 1,1-dichloro-ethane at 23.26 ug/kg; No TPH detections; low levels of lead (<24 ug/L)	No further action for surface soils Resample groundwater and define extent if necessary
15	PCB Capacitor Spill, Fire Station No. 1	Low levels of PCBs; detected concentrations well below 10 ppm action level	No further action
16	PCB Capacitor Spill, Pole No. 425	Elevated concentrations of PCB's (>100 ppm) detected in 3 of the 5 samples	Define vertical and areal extent of contamination and remove soils
17	SIMA (Building 1256) Motor Oil Disposal Area	No VOCs detected; lead concentrations with acceptable ranges; single detection of TPH above 100 ppm guidance level	No further action

Removal of the waste oil tank and surrounding soil has effectively mitigated any past or current environmental problems associated with the on-site storage/disposal of waste oils at this site. In addition, areas of stained soil, described in the IAS, have been covered with an asphalt parking lot and therefore no longer pose a direct contact risk and no longer contaminate precipitation (which could flow as run-off into nearby surface waters or leach into the groundwater). Assuming proper management of crankcase oil and other wastes in the future, additional environmental concerns at Site 4 should not arise.

The IAS indicated the possible disposal of oil, solvents, and antifreeze via the storm sewer system. Beyond the observation that a new oil-water separator had been installed at the site, this PSI did not address potential impacts of past waste management practices on the storm sewer system.

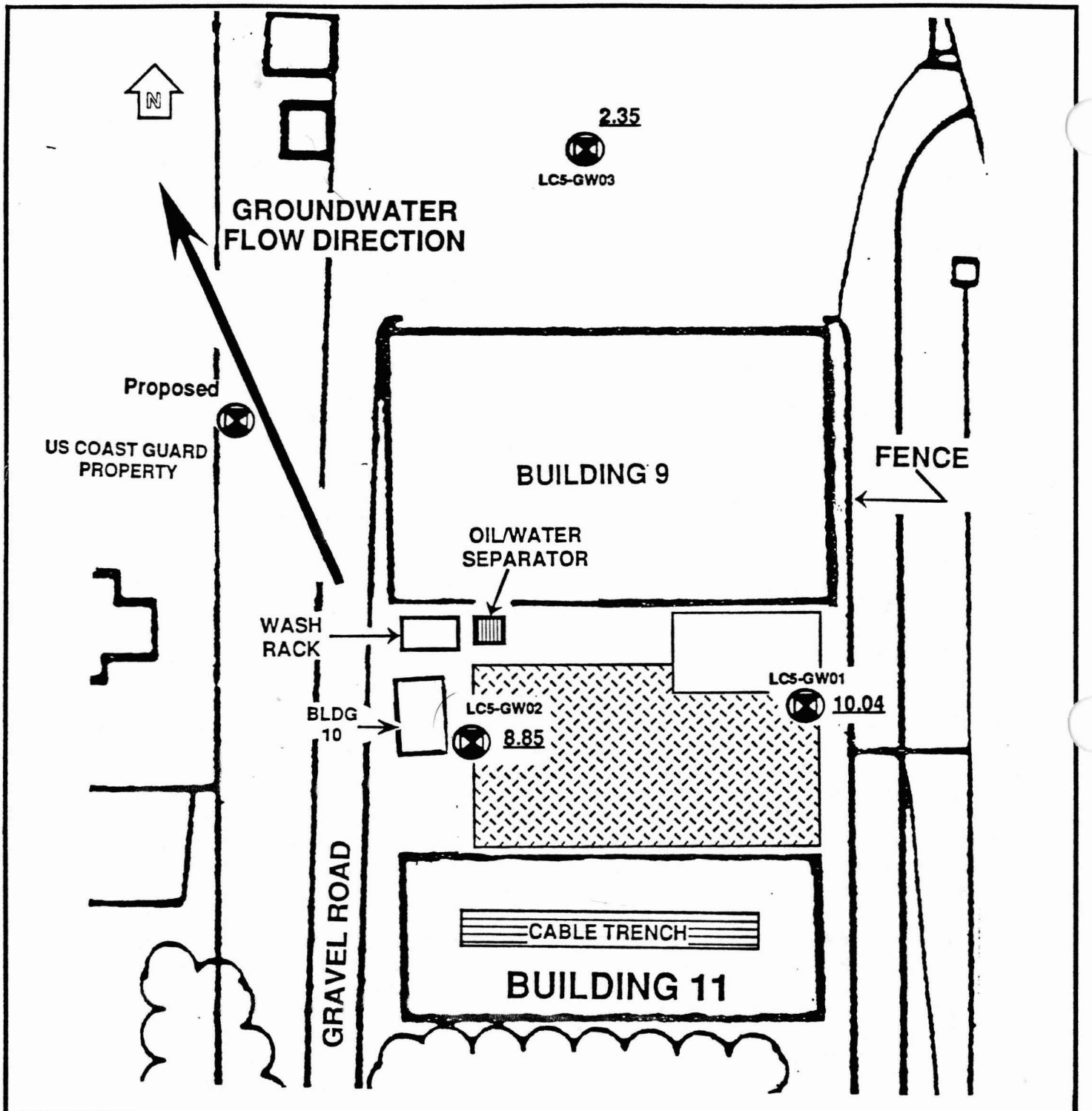
3.2 SITE 5 - BUILDINGS 9-11 MOTOR OIL DISPOSAL AREA

Further action is recommended at Site 5. The results of the PSI sampling program, which included four groundwater samples and five surface soil samples, indicated that waste handling and disposal activities at Site 5 may have resulted in contamination of groundwater with volatile organics and lead at the site may be present.

The results of the soil sampling program indicate that petroleum hydrocarbons are present in the surface soil between Buildings 9 and 11, but that the levels of hydrocarbon are generally low and well below Virginia's 100 ppm guidance level. No volatile organic compounds were detected in the soil samples. The absence of detections of oil-related compounds in the groundwater samples from the site provides further evidence that significant oil-related contamination is not present in the surface soils at the site.

The IAS (NEESA, 1984), refers to large quantities of oil which reportedly were dumped on the ground between the buildings. If this were the case, the soil and groundwater sampling program conducted would have detected evidence of oil-related contaminants. The fact that none were detected implies that the oil was disposed elsewhere. Future investigative activities at the site should consider the possibility that this oil was dumped into the storm sewer.

The focus of the further characterization activities at Site 5 will be to confirm the presence of chlorinated compounds in the groundwater at the site. A single detection of 1,1-dichloroethane (1,1-DCA) was reported in monitoring well 5-GW02 (Figure 3-1). 1,1-DCA was not detected in the other two monitoring wells installed and sampled at the site. As shown by the arrow on Figure 3-1, groundwater at the site is flowing almost directly north (based on water levels measured at the time of sampling); the absence of 1,1-DCA in the other two wells indicates the "plume" is



EXPLANATION

- Marsden Matting
- Monitoring Well
- 8.85 Water Table Elevation* Measured 1/16/91

* Elevations are relative to arbitrary surveyor's datum and not Mean Sea Level

NAB LITTLE CREEK, NORFOLK, VA

FIGURE 3-1
SITE 5 GROUNDWATER
ELEVATION DATA

EBASCO SERVICES INCORPORATED

limited in terms of eastward extent. The upgradient, downgradient, and westward extent of contamination cannot be determined. Additionally, the source of the 1,1-DCA is not known. The recommendations are as follows:

1) Verification of the detection of 1,1-DCA should be made with the collection of another round of groundwater samples from each of the three wells on-site. Samples should be analyzed for TCL VOCs. Filtered groundwater samples from wells 5-GW02 and 5-GW03 should be collected and analyzed for lead. This procedure will facilitate an evaluation of the lead concentrations.

2) If groundwater resampling verifies the presence of 1,1-DCA, sampling of the soil beneath the floor of Building 10 should be conducted to determine if this building is the source of the 1,1-DCA. Samples collected should be analyzed for TCL VOCs.

3) Samples of the fluid and sediment in the cable trench located in Building 11 should be collected to determine if the trench is the source of groundwater contamination. Samples collected should be analyzed for TCL VOCs.

If the presence of groundwater contamination is verified, an additional monitoring well should be installed directly downgradient of monitoring well 5-GW02 to determine the extent of the contamination. A proposed location for the monitoring well is shown on Figure 3-1.

3.3 SITE 15 - PCB CAPACITOR SPILL FIRE STATION NO. 1

No further action is recommended at Site 15. The analytical results of the surface soil sampling in the vicinity of the PCB capacitor spill indicated only low levels of PCBs (<10 ppm) are present in the soil. Under applicable regulations (RCRA and TSCA), no mitigation actions are required.

The IAS (NEESA, 1984) indicated that elevated concentrations of PCBs were present at the site. These concentrations were not observed in samples collected for this PSI. Soil in the vicinity of the spill was excavated to a depth of 7 inches and taken away from the site. The final disposal site for this PCB-contaminated soil is not known. The area was backfilled with clean soil.

3.4 SITE 16 - PCB CAPACITOR SPILL POWER POLE NO. 425

Further action is also recommended at the site of the PCB capacitor spill at Pole No. 425. The results of the analytical sampling program indicate the presence of elevated concentrations of PCBs in the soil surrounding the pole. Additionally, the presence of a campground adjacent to the site and the recent excavation and regrading in the area will require an enlarged sampling program to

define the areal and vertical extent of the PCB contamination. The recommendations are as follows:

1) The area should continue to be cordoned off with the use of fencing and appropriate warning placards indicating that the area is contaminated.

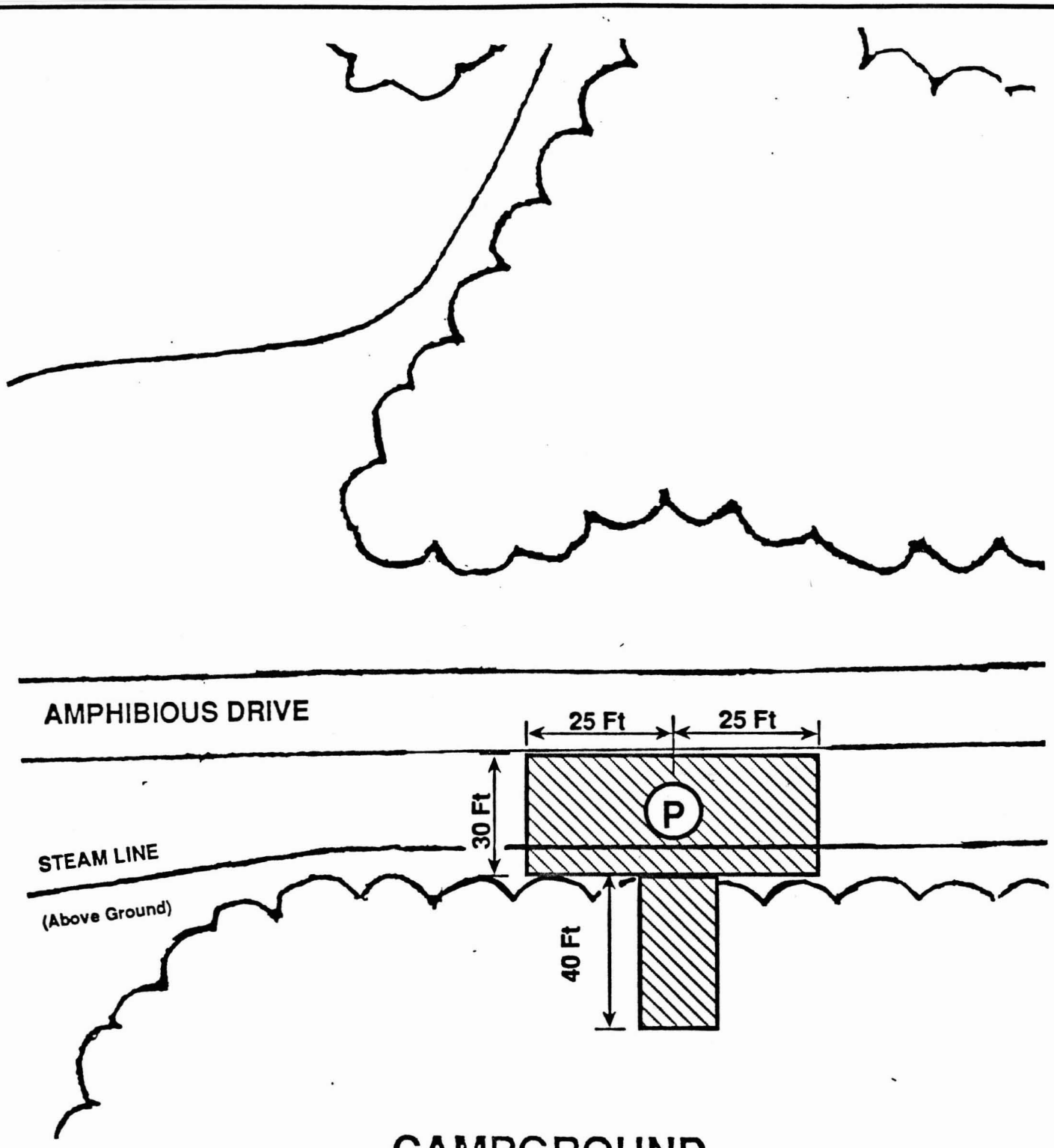
2) Sampling of both surface and subsurface soil should be conducted to define the areal and vertical extent of the PCB contamination. Proposed sampling areas are shown in Figure 3-2. The area to be sampled extends 25 feet east and west of Pole No. 425 and across the entire 30-foot width of the grassy area between the road and the tree line (parallel to and south of the steam line) and approximately 40 feet south along the alignment of the buried cable excavation. Within the area between the road and the tree line, surface soils would be sampled using a rectangular grid with sampling nodes on 10 foot centers. Both surface and subsurface soil samples should be collected using a hand-auger along the trench alignment between the pole and a point approximately 40 feet south of the pole. The subsurface soil samples should be collected to a depth of at least 2 feet, the estimated depth of the cable excavation. Additionally, composite samples should be collected from the piles of soil which are located adjacent to the trench leading to the campground (these piles are generally within 5 feet to the east or west of the trench alignment).

3) Because of the proximity of the campground to the site of the spill, the area should be considered residential and open and the most stringent clean-up level should be employed. The cleanup level utilized for remediation of the contaminated soil at Pole No. 425 should be 1 ppm (EPA/540/G-90/007, August 1990).

4) Contaminated soil should be removed and placed in a TSCA-approved landfill. Additional characterization tests such as TCLP may be necessary to determine suitability of the soil for landfilling.

3.5 SITE 17 - SIMA (BUILDING 1256) MOTOR OIL DISPOSAL AREA

No further action is recommended at the SIMA motor oil disposal area. There is no visible evidence supporting the IAS data that widespread dumping of waste oil occurred at this site. These observations were confirmed by the absence of TPH and other potential contaminants in the soil samples collected from the alleged disposal area at the site. There is one small area of oil-stained soil (<4 square feet); however, this area is expected to have negligible impact on the environment. For these reasons, additional characterization or mitigation activities at Site 17 are not justified.



EXPLANATION
(P) Pole No. 425
Proposed Soil Sampling Area

NAB LITTLE CREEK, NORFOLK, VA
FIGURE 3-2 PROPOSED SOIL SAMPLING AT SITE 16
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APPENDIX A

MONITORING WELL CONSTRUCTION DIAGRAMS

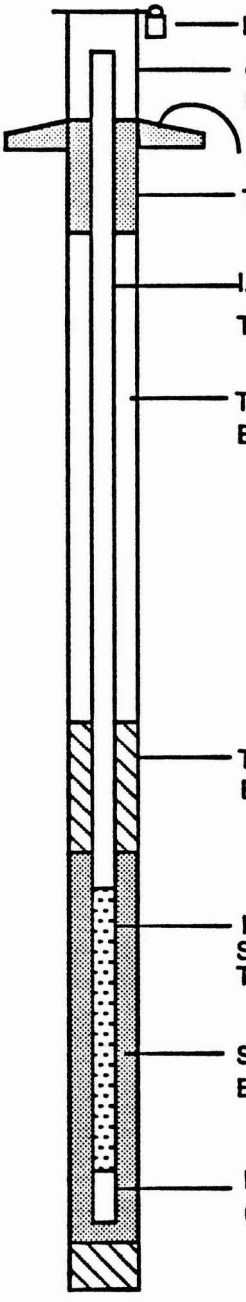
CONSTRUCTION SKETCH
MONITORING WELL

EBASCO

PROJECT LITTLE CREEK PRELIMINARY SITE INSPECTION
JOB NO. NAVY 1812001
DRILLING SUBCONTRACTOR Fishburne Drilling Co.
DRILLER J. Fishburne

DRILLING METHOD Hollow Stem Auger
MONITORING WELL NUMBER LC5-GW01
DATE OF WELL INSTALLATION 12/10/90
DATE OF WELL DEVELOPMENT 12/12/90
GEOLOGIST S. MAHMUD

ELEVATION (M.S.L.)	DEPTH OR HEIGHT FROM GROUND SURFACE		
		LOCKING CAP	
		O.D. OF OUTER PROTECTIVE CASING	4"
	0.0	DIMENSION OF CONCRETE PAD	3' x 3'
		TYPE OF SURFACE SEAL	cement with grout
	2'		
		I.D. OF RISER PIPE	2"
		TYPE OF RISER PIPE	PVC
		TYPE OF BACKFILL	sand
		EMPLACEMENT METHOD	poured
	7'		
		TYPE OF SEAL	Bentonite
		EMPLACEMENT METHOD	Poured
	9'		
	10'		
		I.D. OF SCREEN	1.75"
		SLOT SIZE OF SCREEN	0.010"
		TYPE OF SCREEN	Slotted
		SIZE OF FILTER SAND	20-40 mesh poured
		EMPLACEMENT METHOD	or natural
	20'		
		LENGTH OF TAILPIPE (IF PRESENT)	n/a



N/A - NOT APPLICABLE

WATER LEVEL MEASUREMENTS	DATE									
	DEPTH FROM TOP OF RISER PIPE									
	ELEVATION									

CONSTRUCTION SKETCH
MONITORING WELL

EBASCO

PROJECT LITTLE CREEK PRELIMINARY SITE INSPECTION
JOB NO. NAVY 1812001
DRILLING SUBCONTRACTOR Fishburne Drilling Co.
DRILLER J. Fishburne

DRILLING METHOD Hollow Stem Auger
MONITORING WELL NUMBER LC5-GW02
DATE OF WELL INSTALLATION 12/10/90
DATE OF WELL DEVELOPMENT 12/12/90
GEOLOGIST S. MAHMUD

ELEVATION (M.S.L.)	DEPTH OR HEIGHT FROM GROUND SURFACE		
		LOCKING CAP	
		O.D. OF OUTER PROTECTIVE CASING	4"
	0.0	DIMENSION OF CONCRETE PAD	3' x 3'
		TYPE OF SURFACE SEAL	cement with grout
	2'	I.D. OF RISER PIPE	2"
		TYPE OF RISER PIPE	PVC
		TYPE OF BACKFILL	sand
		EMPLACEMENT METHOD	poured
	7'	TYPE OF SEAL	Bentonite
		EMPLACEMENT METHOD	Poured
	9'	I.D. OF SCREEN	1.75"
	10'	SLOT SIZE OF SCREEN	0.010"
		TYPE OF SCREEN	Slotted
		SIZE OF FILTER SAND	20-40 mesh poured
		EMPLACEMENT METHOD	or natural
	20'	LENGTH OF TAILPIPE (IF PRESENT)	n/a

N/A - NOT APPLICABLE

WATER LEVEL MEASUREMENTS										
	DATE									
	DEPTH FROM TOP OF RISER PIPE									
	ELEVATION									

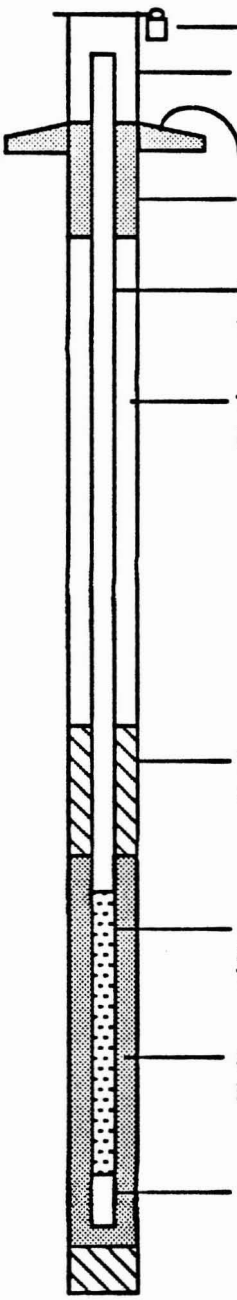
CONSTRUCTION SKETCH
MONITORING WELL

EBASCO

PROJECT LITTLE CREEK PRELIMINARY SITE INSPECTION
JOB NO. NAVY 1812001
DRILLING SUBCONTRACTOR Fishburne Drilling Co.
DRILLER J. Fishburne

DRILLING METHOD Hollow Stem Auger
MONITORING WELL NUMBER LC5-GW03
DATE OF WELL INSTALLATION 12/10/90
DATE OF WELL DEVELOPMENT 12/12/90
GEOLOGIST S. MAHMUD

ELEVATION (M.S.L.)	DEPTH OR HEIGHT FROM GROUND SURFACE
	0.0
	2'
	7'
	9'
	10'
	20'



LOCKING CAP	
O.D. OF OUTER PROTECTIVE CASING	Flush mount
DIMENSION OF CONCRETE PAD	3' x 3'
TYPE OF SURFACE SEAL	cement with grout
I.D. OF RISER PIPE	2"
TYPE OF RISER PIPE	PVC
TYPE OF BACKFILL	sand
EMPLACEMENT METHOD	poured
TYPE OF SEAL	Bentonite
EMPLACEMENT METHOD	Poured
I.D. OF SCREEN	1.75"
SLOT SIZE OF SCREEN	0.010"
TYPE OF SCREEN	Slotted
SIZE OF FILTER SAND	20-40 mesh poured
EMPLACEMENT METHOD	or natural
LENGTH OF TAILPIPE (IF PRESENT)	n/a

N/A - NOT APPLICABLE

WATER LEVEL MEASUREMENTS										
	DATE									
	DEPTH FROM TOP OF RISER PIPE									
	ELEVATION									

APPENDIX B

DATA QA/QC SUMMARY

Data Validation Summary Report
Naval Amphibious Base, Little Creek
Draft Preliminary Site Inspection

Data Validation

The water and soil samples collected for this project samples were analyzed for volatile organic compounds, PCBs, total petroleum hydrocarbons and lead in accordance with Navy Level C requirements.

Volatile Fraction

Methylene chloride and acetone in the samples are below the five times the amount present in the laboratory/field blanks. The reported results have been qualified with "B" as due to blank contamination.

TPH and Lead

All analyses for the detection of total petroleum hydrocarbons and lead in all samples were successful. Data validation revealed that all quality assurance procedures were in accordance with EPA National Functional Guidelines for Data Validation and the Navy QAPP.

PCBs

All analyses for the detection of polychlorinated biphenyls in all samples were successful. The reported results of Aroclors 1248 and 1242 may be representative of these and other isomers.

All data were reviewed accoring to the EPA National Functional Guidelines for Evaluation of Organic/Inorganic Analyses and Section 8.2 of the Navy Quality Assurance Plan.